

## REMARKS/ARGUMENTS

Claims 1-57 were pending in the present application before this amendment as set forth above. Among them, claims 42-49 were under examination, and claims 1-41 and 50-57 were withdrawn as being drawn to non-elected subject matter. By this Amendment, claim 42 is amended.

The December 19, 2006 Office Action rejected claims 42-45 and 47-49 under 35 U.S.C. §102(b) as being anticipated by US Pat. No. 4,391,151 to Nelson et al. (hereinafter "Nelson"), and claim 46 under 35 U.S.C. §103(a) as being unpatentable over Nelson in view of U.S. Pat. No. 6,506,345 to Lee et al. (hereinafter "Lee").

Applicants appreciate the Examiner's careful review of the application.

In response, as set forth above, claim 42 has been amended to distinctly recite the present invention. Additionally, the specification and Figs. 2C-2F of the drawings have been amended to correct informalities such as typos so that the amended claims, the written description, abstract and the drawings are consistent with each other.

Support for the amendment set forth above can be found in the disclosure as originally filed, and particular in Fig. 2A1 of the drawings. Thus, no new matter is added.

The following remarks herein are considered to be responsive thereto.

### ***35 U.S.C. §102 Rejections***

In the December 29, 2006 Office Action, claims 42-45 and 47-49 were rejected under 35 U.S.C. §102(b) as being anticipated by Nelson. Applicants respectfully traverse the rejections made by the Examiner at least for the reasons discussed below.

#### **Claims 42-45 and 47-49:**

As set forth above, among other unique limitations, amended claim 42 recites a bioreactor that has

- i. ***"a first substrate having a first surface and an opposite second surface, defining a chamber therebetween the first surface and the opposite second surface of the first substrate for receiving biological cells and a liquid medium;***
- ii. ***an inlet port*** formed in the first substrate and apart from the chamber;

- iii. ***a first connection channel*** formed in the first substrate, wherein ***the first connection channel is in fluid communication with the inlet port and the chamber*** for allowing a stream of substance to be delivered to the chamber;
- iv. ***an outlet port*** formed in the first substrate and apart from the chamber;
- v. ***a second connection channel*** formed in the first substrate, wherein ***the second connection channel is in fluid communication with the outlet port and the chamber*** for allowing a stream of substance to be removed from the chamber; and
- vi. ***confining means positioned in the chamber*** to form a confinement region ***to confine the biological cells therein with the liquid medium,***  
***wherein the chamber, the inlet portion, the first connection channel, the outlet port, and the second connection channel are all formed in the first substrate.***"

(Emphasis added.)

First, applicants respectfully submit that the bioreactor as defined by amended claim 1, which, among others, is to receive and confine biological cells in a liquid medium, is functionally and structurally different patentably from that of the air sampler of Nelson, which, as the Examiner correctly admitted, is to suck up air through a chamber. Applicants thus submit that Nelson is not a proper reference to be cited against the present invention and the rejection should be withdrawn.

More particularly, in one embodiment as shown in Figs. 2A1 and 2C-2F of the present application as originally filed, for example, the bioreactor 1000 includes a first substrate 1001 having a first surface 1001a and an opposite second surface 1001b, defining ***a chamber 1006 therebetween the first surface 1001a and the opposite, second surface 1001b of the first substrate 1001*** for receiving ***biological cells 1008*** and ***a liquid medium***. An inlet port 1021 ***apart from the chamber 1006*** and ***a first connection channel 1021a*** are formed in the first substrate 1001, where the first connection channel 1021a is in fluid communication with the inlet port 1021 and the chamber 1006 for allowing a stream of substance to be delivered to the chamber 1006. Additionally, an outlet port 1005 ***apart from the chamber 1006*** and ***a second connection channel 1005a*** are formed in the first substrate 1001, where the second connection channel 1005a is in fluid communication with the outlet port 1005 and the chamber 1006 for

allowing a stream of substance to be removed from the chamber 1006. The bioreactor 1000 further has confining means 1085a and 1085b positioned in the chamber 1006 to form a confinement region 1006a to confine the **biological cells** 1008 therein **with the liquid medium**. For such a bioreactor 1000, all the chamber 1006, the first connection channel 1021, the second connection channel 1005, the inlet port 1021, and the outlet port 1005 are **all formed in the first substrate 1001**, as defined in amended claim 42.

In contrast, as shown in Figs. 1-5 and understood by applicants, Nelson discloses a sampling device for the particulate matter of **air** and **gaseous fluids** that includes “(a) **a chamber (19) having an inlet (40) and an outlet (31)**; ... (c) a collector member (41) with an associated orifice member (44, 45) at said inlet ...; (d) a second collector member (34) with an associated second orifice member (32, 39) disposed within said chamber ....” Nelson, col. 9, lines 54-59 through col. 10, lines 1-16. As best shown in FIGS. 2 and 2A and understood by applicants, a low-pressure chamber 19 constitutes a space defined by several detachably joined parts including upper and lower bodies 11 and 12, and motor support plate 15, Nelson, col. 3, lines 19-31, which is not a chamber formed in a substrate as required by amended claim 1 of the present invention. Moreover, Nelson does not show that “**the chamber, the inlet portion, the first connection channel, the outlet port, and the second connection channel are all formed in the first substrate**” as required by amended claim 42.

In fact, Nelson does not disclose any of the above-emphasized limitation of the amended claim 42. Since each and every limitation of amended claim 42 is not found in Nelson, Nelson fails to anticipate amended claim 42.

For at least the foregoing reasons, independent claims 42, as amended, is patentable under 35 U.S.C. § 102(b) over Nelson.

Accordingly, claims 43-49, which depend from now allowable amended claim 42, are patentable at least for the above reasons.

Moreover, individual examination of dependent claims 43-49, some of them amended, is respectfully requested because applicants believe these claims contain additional patentable subject matter(s), respectively. For examples, amended claim 44 recites that “each of the first filter and the second filter comprises **a plurality of posts spaced apart from each other not to allow biological cells to pass through it**”, which is neither taught nor suggested by Nelson.

Moreover, amended claim 45 recites that “the first substrate further defines *a first alternate port and a third connection channel in fluid communication with the first alternate port and the confined region of the chamber for allowing seed biological cells to perfuse only* outside the confined region in the chamber”, which is neither taught nor suggested by Nelson.

### ***35 U.S.C. §103 Rejections***

In the December 29, 2006 Office Action, claim 46 was rejected under 35 U.S.C. §103(a) as being unpatentable over Nelson in view of Lee.

Claim 46 depends from now allowable amended claim 42 and therefore should be patentable over Nelson and Lee.

Any amendments to the claims not specifically referred to herein as being included for the purpose of distinguishing the claims from cited references are included for the purpose of clarification, consistence and/or grammatical correction only.

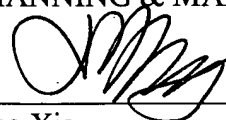
It is now believed that the application is in condition for allowance and such allowance is respectfully requested.

### **CONCLUSION**

Applicants respectfully submit that the foregoing Amendment and Response place this application in condition for allowance. If the Examiner believes that there are any issues that can be resolved by a telephone conference, or that there are any informalities that can be corrected by an Examiner's amendment, please call the undersigned at 404.495.3678.

Respectfully submitted,

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March 19, 2007

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S/N: 10/525,559

PATENT  
Confirmation No.: 9529

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: John P. Wikswo et al. Examiner: Ann Y. Lam  
Serial No.: 10/525,559 Group Art Unit: 1744  
Filed: October 24, 2005 Docket No.: 14506-48686  
Title: CAPILLARY PERFUSED BIOREACTORS WITH MULTIPLE CHAMBERS

CERTIFICATE UNDER 37 CFR 1.8:

I hereby certify that this correspondence is being deposited on March 19, 2007 with the United States Postal Service as first class mail, with sufficient postage, in an envelope addressed to: Mail Stop: Non-Fee Amendment Commissioner for Patents, P.O. Box 1450, Alexandria, VA 22313-1450.

By: 

Name: Tim Tingkang Xia

**SUBMISSION OF CORRECTED DRAWINGS SHEETS**  
**IN COMPLIANCE WITH 37 C.F.R. 1.121(d)**

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P.O. Box 1450  
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March 19, 2007

**CUSTOMER NO. 24728**


Dear Sir:

In response to the Office Action mailed December 19, 2006, submitted herewith are Four (4) sheets of formal drawings for replacement. The enclosed sheets of formal drawings replace the original sheets of drawings as filed. Attached please also find annotated sheets of drawings showing changes in red-line to correct certain informalities. Applicants assert that no new matter is added.

Respectfully submitted,

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March 19, 2007

  
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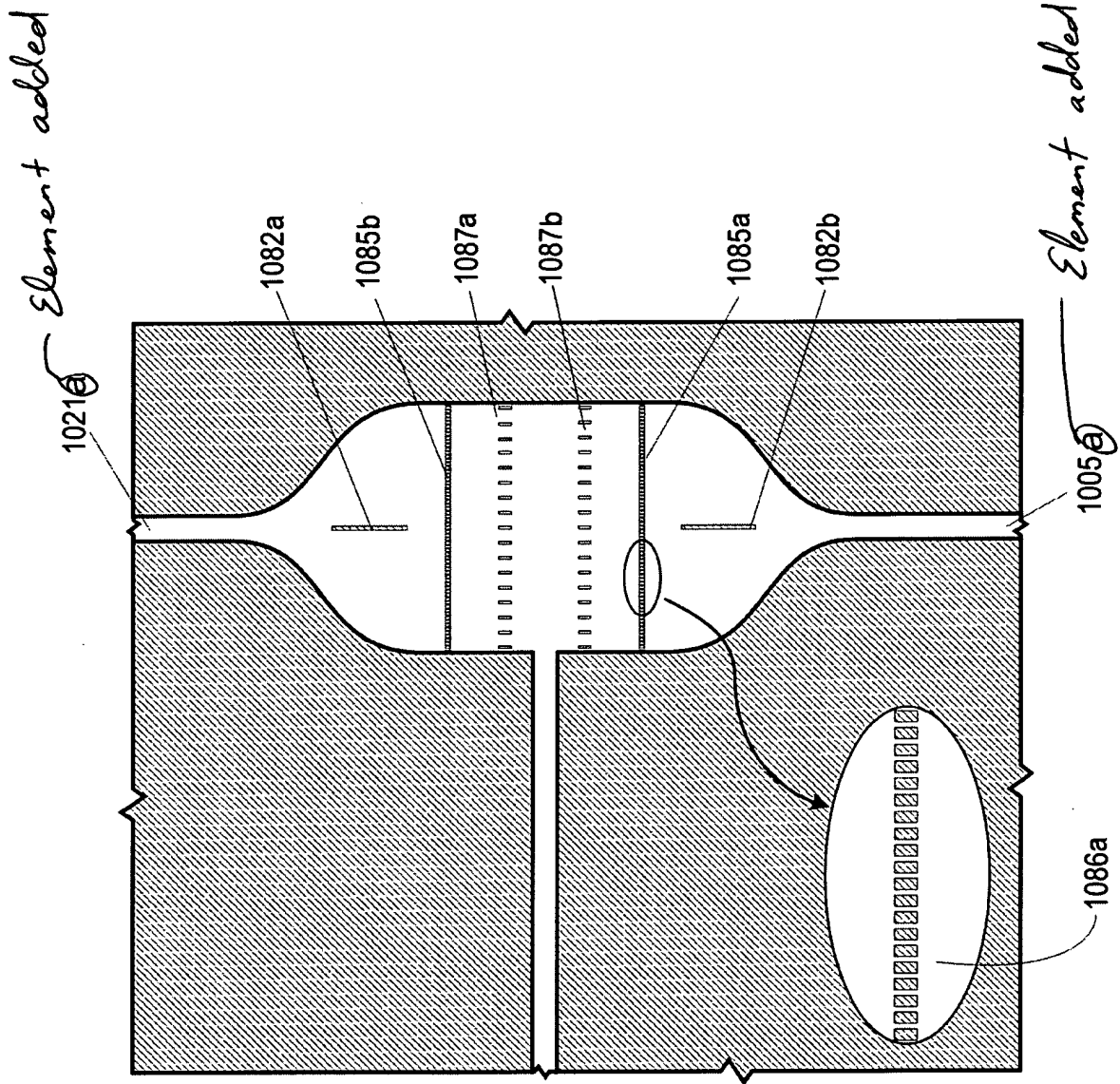


Fig. 2D

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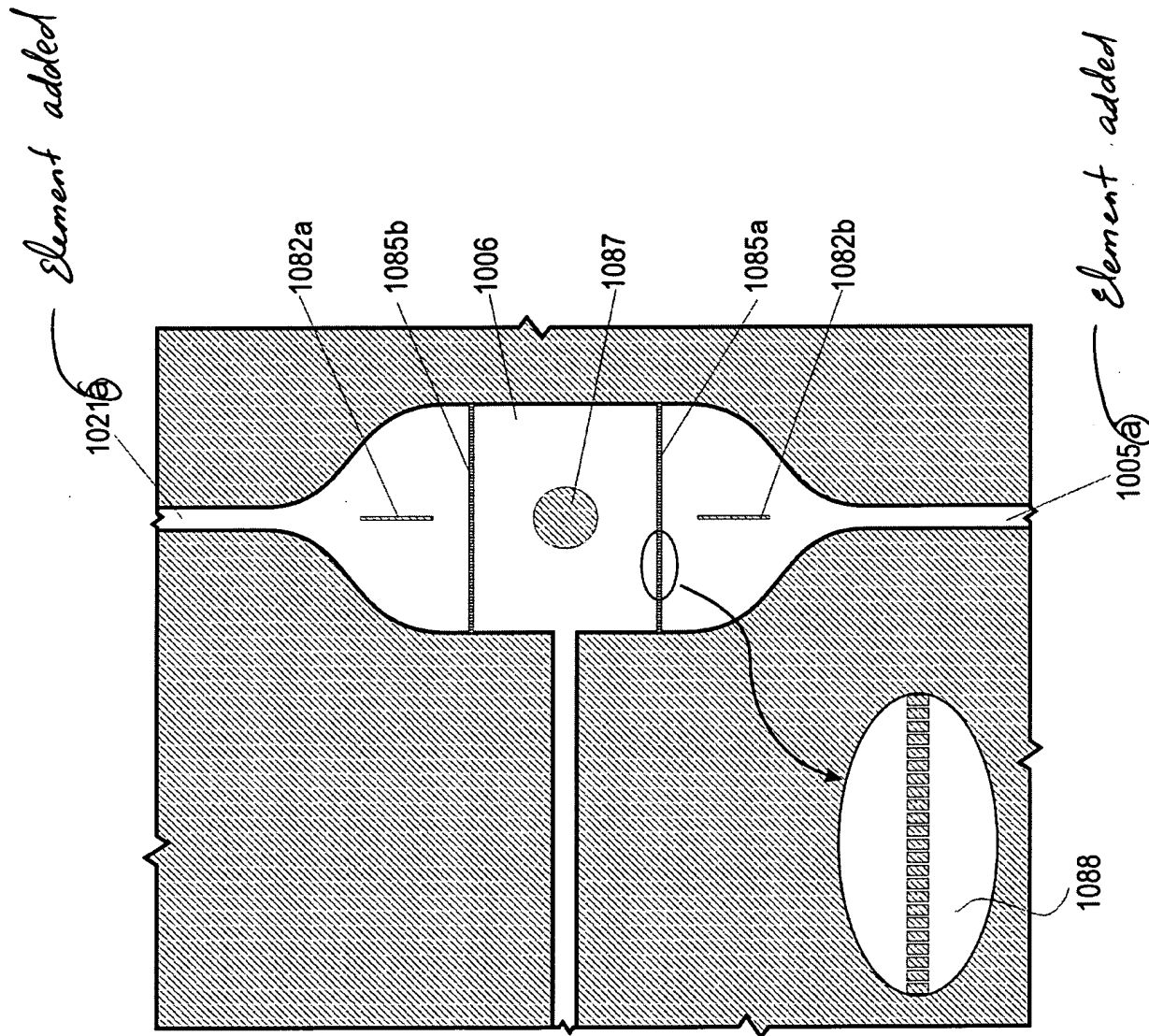


Fig. 2E



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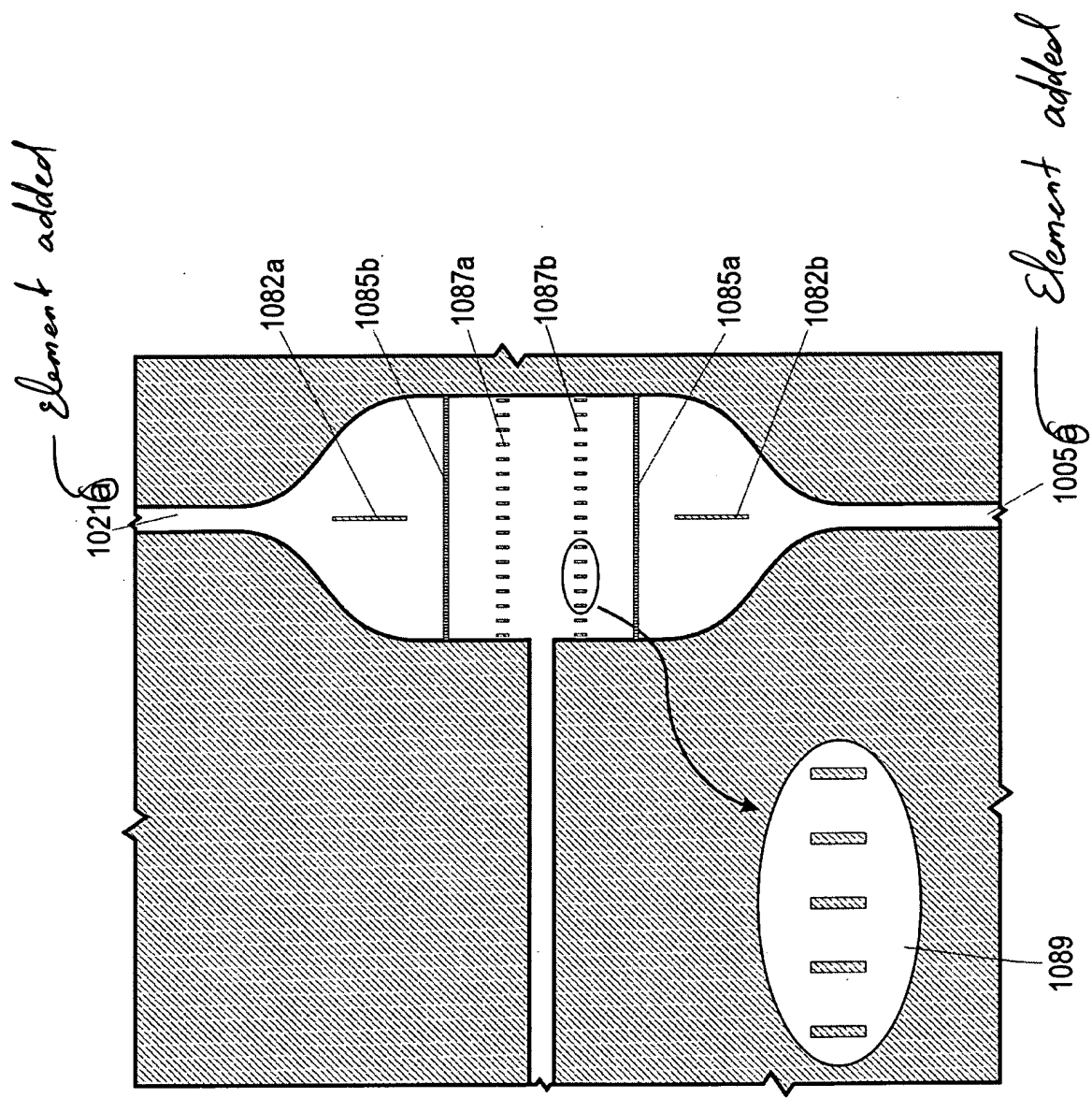


Fig. 2F